NARRATIVE INSPECTION REPORT

Facility Information

KYD-041-376-138
Ashland Petroleum Company (Refinery)
Catlettsburg, KY 41129
Boyd County

Inspector and Author of Report

Karen Campbell, Environmental Inspector II
Morehead Regional Office

Date and Time of Inspection

March 29-30, 1994

Purpose of Inspection

Routine Compliance

Inspection Participants

Karen Hall - Division of Waste Management
Joe Hissom - Ashland Petroleum Company
Brad Lyon - Ashland Petroleum Company

Facility Description

The Ashland Petroleum Company operates a crude oil refinery in Boyd County, Catlettsburg, Kentucky. The facility produces petroleum products by the use of topping, cracking, lube oil manufacturing processes and petro chemical operations. Some of the products produced are: benzene, toluene, xylene, cumene, specialty solvents, jet fuel, kerosene, diesel fuel, MTBE, sulfur light cycle oil, lube oils, #6 fuel oil,

asphalt pitch and gasoline. MTBE is an oxidant used as an octane enhancer. Benzene is extracted from the crude oil and is used to produce cumene. The refinery has a total of 35 process units.

The following units generate catalyst potentially contaminated with listed wastes (such as arsenic):

1. Naphtha Pretreater or Guard Case Unit - This unit processes full range naphtha (170°F - 400°F boiling point) to remove essentially all sulfur compounds from the naphtha. The product naphtha can then be processed in a CCR or reformer unit. The sulfur removal is achieved by reacting the naphtha with hydrogen at elevated temperature and pressure over a catalyst bed to convert essentially all of the sulfur in the naphtha to hydrogen sulfide. The hydrogen sulfide is then removed from the naphtha in a stripper distillation tower.

2. Specialty Hydrotreater - This unit processes naphtha and light kerosene to remove essentially all sulfur compounds from the feed. The product can then be processed in an aromatics saturation unit. The sulfur removal is achieved by reacting the naphtha and kerosene with hydrogen at elevated temperature and pressure over a catalyst bed to convert essentially all of the sulfur in the naphtha and kerosene to hydrogen sulfide. The hydrogen sulfide is then removed from the naphtha and kerosene in a stripper distillation tower.

3. Isomerization Hydrobon - This unit processes mainly C5 and C6 compounds to remove essentially all sulfur compounds from the feed. The product can then be processed in an isomerization unit. The sulfur removal is achieved by reacting the C5 and C6 compounds with hydrogen at elevated temperature and pressure over a catalyst bed to convert essentially all of the sulfur in the feed to hydrogen sulfide. The hydrogen sulfide is then

removed from the C5 and C6 stream in a stripper distillation tower.

4. Aromatic Desulfurizer - This unit processes coal tar light oil (CTLO) received from coke plants to remove essentially all sulfur compounds from the feed. The product is then used in petrochemical manufacturing. The sulfur removal is achieved by reacting the CTLO with hydrogen at elevated temperature and pressure over a catalyst bed to convert essentially all of the sulfur in the CTLO to hydrogen sulfide. The hydrogen sulfide is then removed from the CTLO in a stripper distillation tower.

5. Naphtha Hydrogenation Unit (NHU) - This unit processes naphtha from the ART Unit to partially saturate olefins and diolefins in the feed and to remove the majority of the sulfur from the feed. The product can then be processed in a guard case unit or naphtha pretreater. The sulfur removal is achieved by reacting the naphtha with hydrogen at elevated temperature and pressure over a catalyst bed to convert a portion of the sulfur in the naphtha to hydrogen sulfide. Saturation of diolefins and olefins also occurs in this reactor. The hydrogen sulfide is then partially removed from the naphtha in two flash drums. Final hydrogen sulfide removal occurs in the downstream guard case unit.

6. SCOT Unit - This is the Shell Claus offgas treating unit. This unit processes tailgas from a Claus sulfur recovery unit to remove the majority of the sulfur compounds from the tailgas before it is incinerated. The tailgas is reacted with hydrogen at an elevated temperature over a catalyst bed to convert essentially all of the sulfur compounds in the tailgas to hydrogen sulfide. The hydrogen sulfide is then removed from the tailgas using an amine absorption process. The hydrogen sulfide is then recycled to the Sulfur Recovery Unit for conversion

to sulfur.

7. Distillate Hydrotreater - This unit processes either kerosene or diesel material to remove the majority of the sulfur compounds from the kerosene or diesel with hydrogen at elevated temperature and pressure over a catalyst bed to convert the majority of the sulfur in the kerosene or diesel to hydrogen sulfide. The hydrogen sulfide is then removed from the kerosene or diesel in a stripper distillation tower.

8. Vacuum Gas Oil Desulfurizer or FCC Feed Hydrotreater - This unit treats gas oil material (typically 650°F - 950°F boiling point) to improve its quality as a feedstock for an FCC unit. As a result of this treatment the sulfur content, nitrogen content and polynuclear aromatic content of the material will be lowered. The feed is reacted with hydrogen at elevated temperature and pressure over a catalyst bed. Some of the sulfur in the feed will be converted to hydrogen sulfide, some of the nitrogen in the feed will be converted to ammonia and some of the polynuclear aromatics will be saturated. The product is then water washed and stripped in a stripper distillation tower to remove the hydrogen sulfide and ammonia.

Findings

The waste determination and analysis were complete and on file. The annual report was verified with corresponding manifests. The manifests were numbered in sequential order beginning with 07507-07539. All the manifests contained the required information. Ashland Petroleum used the following facilities for disposal sites:

Rineco Chemical 1007 Vulcan Rd. Benton, AR	D018 and K050

Amax Metals Recovery 3607 English Turn Rd. Braithwaite, LA 70040	D018 (Spent catalyst)
Safety-Kleen Corporation State Hwy. 146 New Castle, KY 40050	F005 and D001
Ashland Petroleum Company Rt. 3 Landfill Catlettsburg, KY 41129	D018 and D038
Catalyst Recovery, Inc. 100 American Blvd. Lafayette, LA 70508	D018
Ensco American Oil Rd. El Dorado, AR 71738	K050, D001 and D007
Chemical Waste Management Adams Center Landfill 4636 Adams Center Rd. Fort Wayne, IN 46806	D018 and F037

Personnel training requirements are being met. All employees receive RCRA training which is ongoing throughout the year. New employees are given a classroom course from a Regulatory Training Program Manual.

The first storage area inspected was in the new north area. There were four (4) totes of spent catalyst (TCLP Benzene) with accumulation start date of 3-16-94. There was one roll-off box of API bottoms (K051) with accumulation start date of 2-14-94. At the #1 Refinery there were five (5) roll-off boxes of cumene catalyst (TCLP Benzene) with accumulation start date of 3-26-94. There were seven (7) roll-off boxes of cumene catalyst being stored at Viney Branch with accumulation start date of 3-24-94. There was no satellite accumulation area(s) at the time of this inspection.

Violations and Remedial Measures

Violations were not observed during this inspection.

This was an unannounced inspection.

Signature and Date of Report

Karen S. Hall — Inspector

6-7-94 — Date

Karen Glancy — Supervisor

6-20-94 — Date